3.0 EVALUATION OF COASTAL STRUCTURES

The crux of the present evaluation is whether each individual coastal structure appears properly designed and maintained in order to protect against and withstand the base flood. If a particular structure can be expected to be stable through the base flood, the structure geometry may figure in all ensuing analyses of wave effects accompanying the flood: coastal erosion, runup and overtopping, and wave crest elevations). Otherwise, the coastal structure is considered to be destroyed during the base flood, and removed from the transect representation before proceeding with analyses of wave effects.

Reference 17 presents a technical review and recommends procedural criteria for evaluating coastal flood-protection structures in regard to the base flood. Reference 28 includes a self-contained account of the evaluation process, reproduced in Appendix B of this report. Reference 28 has been adopted as the basis for NFIP accreditation of new or proposed coastal structures in reducing effective flood hazard areas and elevations. Ideally, these evaluation criteria could be applied to existing coastal structures, but available information about older structures typically is not sufficient to complete the detailed evaluation. Where complete information is not available for existing structures, an engineering judgment about its likely stability can be based on visual inspection of physical condition along with any historical evidence of storm damage and maintenance.

Reference 17 addressed coastal flood-protection structures and identified the four primary types according to a functional standpoint: gravity seawalls, pile-supported seawalls, anchored bulkheads, and dikes or levees. Of particular note, Reference 17 recommended as a general policy that "FEMA not consider anchored bulkheads for flood-protection credit because of extensive failures of anchored bulkheads during large storms and difficulty in checking present conditions . . ."

Flood-protection structures can have a significant impact on a FIRM, perhaps directly justifying the removal of sizable regions from the Coastal High Hazard Area. The focus on flood-protection structures in Reference 28 (Appendix B) should not divert a recognition that similar considerations are appropriate in crediting the base-flood protection provided by structures in other categories, and that such credit can be important. In contrast to flood protection, a breakwater primarily may act to limit wave action and a revetment primarily may control shore erosion, but any stable coastal structure can notably affect results of various hazard analyses for the base flood and these effects should be taken into account. Reference 28 places the burden of proof or certification for new structures onto local interests, but the primary consideration in an FIS must be that the structure evaluation yields a correct judgment based on available evidence. This is necessary for accurate hazard assessments, since an effective structure might decrease flood impacts in one area while increasing erosion and wave hazards at adjacent sites. Of course, the more major the potential effects of a coastal structure, the more detailed should be the evaluation process.